

What is claimed is:

1. A pneumatic tire, in which an annular object having cross-sectional areas which vary depending on locations in a circumferential direction of the tire is mounted on an inner surface of a tread portion, wherein the annular object is formed by partially applying compression forming to a porous material member, which has a density of 5 to 70 kg/m<sup>3</sup>, and which has a uniform cross-sectional shape in the tire circumferential direction.
2. The pneumatic tire according to claim 1, wherein a constraining member for maintaining a compressed state is attached to each compressed portion of the porous material member.
3. The pneumatic tire according to claim 1, wherein each compressed portion of the porous material member is formed by thermal fusion.
4. The pneumatic tire according to claim 1, wherein each compressed portion of the porous material member is formed by hot pressing.
5. The pneumatic tire according to any one of claims 1 to 4, wherein a range of variations in weight per unit length of the porous material member in the circumferential direction of the tire is 0 to 2 %.
6. The pneumatic tire according to any one of claims 1 to 5, wherein a difference between a maximum value  $S_{max}$  and a minimum value  $S_{min}$  of the cross-sectional areas of the porous material member after the compression forming is not less than 10 % of a cross-sectional area of a cavity portion formed between the tire and a rim of a wheel.
7. The pneumatic tire according to any one of claims 1 to 6, wherein a maximum value  $T_{max}$  and a minimum value  $T_{min}$  of the thicknesses of the porous material member after the compression forming satisfy  $T_{max} \geq 10$

mm, and  $T_{min} \geq 1$  mm at the same time.

8. The pneumatic tire according to any one of claims 1 to 6, wherein the compressed portions and uncompressed portions of the porous material member are alternately arranged in the tire circumferential direction.

9. The pneumatic tire according to any one of claims 1 to 8, wherein a shape of each of the compressed portions and the uncompressed portions of the porous material member is formed into a rectangle.

10. The pneumatic tire according to any one of claims 1 to 8, wherein a shape of each of the compressed portions and the uncompressed portions of the porous material member is formed into a parallelogram.

11. The pneumatic tire according to any one of claims 1 to 10, wherein the porous material member is made of polyurethane foam.